

Hepatitis B and Hepatitis C Viral Infections among Pregnant Women in Some Nigerian Major Cities: A Review

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ABSTRACT

Background: Worldwide, viral hepatitis is the commonest cause of hepatitis dysfunction in pregnancy. During pregnancy, viral hepatitis is associated with high risk of maternal complications and has become a leading cause of foetal death.

Aim: This review was done to assess the status of hepatitis B and hepatitis C viral infection among pregnant women in some Nigerian major cities.

Methodology: The information used for this review was from published works in Nigeria and elsewhere. The information was extracted over the period of two years from November 2015 to October 2017.

Results: In Nigeria, the prevalence of hepatitis B and Hepatitis C viral infection is on the increase and the nation has been classified among the group of countries endemic for the infection with about 18 million of the populace infected. The prevalence of hepatitis B viral infection among pregnant women in many parts of the country has been reported; with Port Harcourt having the prevalence of (4.9%), Yenagoa (5.3%), Benin (12.5%) Jos (10.3%, 15.1% and 23.9%), Ibadan (21.3%) and Kano (7.3%). Anti-HCV antibody prevalence among pregnant women has also been reported in various parts of Nigeria; with Benin having the prevalence of (3.6%), Yenagoa (0.5%), Osogbo (9.2%), Enugu (14.9%), Jos (5.2%), Kaduna (11.9%), and Zaria (18.2%). In Nigeria, the transmission of hepatitis B and Hepatitis C viral infections occur mainly during childhood as a result of maternal-neonatal transmission and by other risk factors like blood transfusion, sexual promiscuity, history of sharing of toothbrush, sharp objects such as razor blades, nail cutters and scissors and instruments for pedicure and manicure. Other modes of the viral infection common in the country include high risk groups such as health care workers, poor socioeconomic status. Thus, all the risk factors implicated elsewhere in the spread of the viral infections in the general population also play role in Nigeria.

Conclusion: The prevalence of hepatitis B virus (HBV) and Hepatitis C virus (HCV) among pregnant women in Nigeria is endemic. Therefore, there is the need to institute public health measures such as routine screening of all pregnant women's blood and blood products for hepatitis, personal and environmental sanitation, and the discouragement of unsupervised injections to reduce disease burden and transmission in the population.

Keywords

Pregnant women, Hepatitis B, Hepatitis C, Viral infections, Nigeria.

Introduction

The seroprevalence of HIV and other viral infections is well

recognized worldwide but has been reported to be more common in Africa and Asia [1-4]. However, the advent of highly active antiretroviral therapy (HAART), in life expectancy of patients with HIV has increased, and the focus has now shifted to the management of illnesses such as Hepatitis B and Hepatitis C

infections [5].

According to Petoumenos et al. [6], Greub, [7], and Feld et al. [8], HBV and HCV infections are the major cause of morbidity and mortality. Viral Hepatitis is the inflammation of the liver caused by hepatitis viruses; it can also be due to toxins (notably by alcohol, certain medications of plants, other infections and autoimmune diseases) [9]. Infections with HBV and HCV are public health problems and are highly endemic in sub-Sahara Africa [10,11]. Worldwide, there are about 350 million HBV carriers [12] and 130 to 170 million people are infected with HCV [13].

Viral hepatitis, during pregnancy is associated with high risk of maternal complications. Pregnant women are considered as a high risk population due to increased exposure to risk factors such as blood transfusion, intravenous drugs or surgical procedures [14]. Azhar et al. [15] reported a higher frequency of HBV infection among multigravida. Increased risk of HBV and HCV infection among multigravidae could be because of their past pregnancies hospital admission, blood transfusion and or/any surgical procedure in the past [16]. Therefore, with each pregnancy and childbirth, chances of exposure of HBV and HCV become greater [17]. It is of note that failure to diagnose and treat these devastating disease agents at an early state may lead to serious consequences and complications such as fetal wastage, premature death, neonatal and infant infections, and even cross contamination from infected individual to non-infected ones.

Nigeria is classified among the group of countries endemic for HBV and HCV infections. Currently about 18 million Nigerians are estimated to have been infected [18,19]. According to Mbaawuaga et al. [20] many of the people infected may not be aware of the infections with the viruses and hence fail to seek appropriate medical attention therefore progressing to chronic liver disease, cirrhosis and hepatocellular carcinoma. This review is intended to provide information that will further draw attention to the realities of these HBV and HCV viral infections as important cause of morbidity and mortality in Nigeria which will inform those interested in developing policies and programmes for the control of such infections. Hence, increased effort to prevent the spread of HBV and HCV infection are urgently needed in Nigeria.

Methodology

Articles that assessed the prevalence of HBV and HCV among pregnant women attending antenatal clinic, and in the general population were used. Other online journals, Google scholar and Scopus were consulted for additional materials. The information was extracted over the period of two years from November 2015 to October 2017.

Results and Discussion

Overall Prevalence in Nigeria

The different studies conducted among pregnant women who attended antenatal clinics at various Nigerian hospitals as revealed in this review are presented in Table 1. The results from different workers and or reporters revealed that HBV and HCV infection

varies in different parts of Nigeria. These reports support the assertion of Zali et al., who reported that viral hepatitis infections varies in different parts of the world from country to country, from one region to another region and from one population group to another in the country. In Nigeria the prevalence of HBV and HCV were estimated to 2.4 – 18.4% and 3.6% to 5% of the population respectively [21-24]. The results in Table 1 show that the prevalence of HBV varies between (2.2 to 12.5%) while that of HCV varies between (0 to 18.2%). Countries are classified as having low endemic rates (<2%), intermediate endemic rates (2-8%) or high endemic rates (8%) positive for viral hepatitis [17]. The rate of the viral infection as observed in this review was supported by WHO's report for Nigeria with prevalence of HBV and HCV greater than 8% and 1.2% respectively [25]. Other workers in Nigeria also reported similar prevalences of the HBV viral infections in other parts of the country Southeast Nigeria (6.3%) Munoz et al. [26], Obi, [27] reported (2.9%) in south-south Nigeria, Ali reported (8.0%) seroprevalence of hepatitis B in pregnancy women, while 18.3% to 12.5% was also reported by another group of workers in Nigeria [28,29] respectively. The prevalence of HBV among pregnant women as shown in Table 1 indicated that all the levels of endemicity according WHO (1990) and WHO (1999) (low, intermediate and high endemicity) are reported by the various workers.

Study Area	% Prevalence of HBV	% Prevalence of HCV	Authors/ Reports/Year of publication
Port Harcourt/ River State.	4.3%/4.9%	--	Ojule et al. (2005). Ejele and Ojule, 2004) [30,31].
Osogbo/Osun State.	--	9.2%	Ogunro et al. (2007) [32].
Makurdi/Benue State.	--	11.0%	Mbaawuaga et al. (2005) [20].
Ibadan/ Oyo State.	8.3%		Anaedobe et al. (2015) [33].
Jos/ Plateau State.	-- 15.9% 23.9%	10.3%	Sirisena et al. (2002) [18] Uneke et al. (2000)* [34] Egah et al. (2007)* [35]
Zaria/ Kaduna State.	--	18.2%	Luka et al. (2008) [36].
Calabar/Cross River	4.7%	--	Inyang Etoh et al. (2016) [37].
Benin City/Edo State.	2.2% 12.5% -- --	0.8%, 3.6% 5.0% 2.1%	Oladeinde et al.(2013) [38] Ugbebor et al.(2011) [28] Duru et al.(2009) [39] Orakaohor et al. (2001) [40]
Kano/Kano State.	7.3% 7.9%	-- --	Dawaki and Kawo (2006) [29], Yakasai et al. (2012) [41]
Nnewi/ Southeast Nigeria/ Anambra State.	6.0%/9.3%	1.0%	Oluboyo et al. (2014) [42], Ezegebudo et al. (2004) [43].
Ido-Ekiti/Ekiti State.	6.78%	1.39%	Esan et al. (2014) [17].
Yenagoa/ Bayelsa State.	5.3%	0.5%	Buseri et al. (2010) [5].

Abuja/Nigeria Federal Capital.	--	1.5%	Awoleael Gebre-Selassie (2005) [44]. Buseri et al. (2010) [5].
Enugu/Enugu State.	--	14.9%	Strickland (2002) [45], Ugbebor et al. (2011) [28].
Lagos/Lagos State	--	4.4%	Obi et al. (1993) [27].
Maidugiri / Borno State	--	12.6%	Jambo et al. (2005) [19].
Keffi/ Nasarawa State	--	17.1%	Nneka (2007)* [46].

Table 1: Prevalence of Hepatitis B and Hepatitis C Viral Infections among Pregnant Women in some Nigerian Major Cities.

*Population not from pregnant women.

The seroprevalance of HBV shown in this review is in consonance with the previous studies done among pregnant women in other countries with intermediate endemicity. Addis Ababa (5.0%), Jimma, Ethiopia, Awole and Gebre-Selassie, 2005. Sierra Leon (6.2%), Zambia (6.5%), USA, only for Asian American (5.6%), Jeju Island of Korea (4.9%) and Turkey (4.2%) [27,30,47-50]. A high prevalence of HBV was found in countries such as Mali (15.5%), Hong Kong (10.0%), Papa New Guinea (11.0%), Taiwan (12.0%), Oman (7.1%) and Brazil (18.5%) also ranging from 7.2% to 38.5% [51-53], Kwan et al. [11], Lin et al. [54] and Sidibie et al. [55].

There are reports from other countries that also showed a low prevalence in the same study population (HBV). For example, USA had a prevalence of 0.14% to 0.97% with the exception of Asian American, Mexico (1.65%), northern part of Kerala State in South India (0.21%), Qatar and United Arab Emirates (1.0-1.5%) [47,51,56,57], comparison of the prevalence of HCV in Nigeria with that of other countries have also been reported. Warda et al. [58], Kumar et al. [59], reported prevalence of HCV (1.03%), 2.1% was reported in Gabon [60], Batool et al. [61] reported 7.3% for anti-HCV, and also reported 2.2% for HBV and 0.08% for HBV and HCV co-infection.

Prevalence of HBV and HCV among Women based on Age groups
The age of acquiring infection is one of the major determinants of the incidence and prevalence rates of HBV and HCV infections. Esan et al. [17], reported the highest prevalence of HBV (36.36%) and HCV (66.67%) was found to be within the age group (31-35 years). This was followed by the age group 26 -30 years with prevalence rates of 24.53% and 22.22% for HBV and HCV respectively. Mbaawuaga et al. [20] reported the highest prevalence of HBsAg (9.7%) within the age rang 20-29 years and HBeAg (4.5%) within the age group 30-35 years, while Buseri et al. [5] whose study on HBsAg and HCV-A and other infections covered the age range from 15 to 44 years for pregnant women reported that the majority of them were in the 25-29 years age group with prevalent rate of 32.8%. In a similar study conducted by Inyang-Etoh [37], the highest prevalence of HBV (7.5%) fell within the age group 26-30 years, while no prevalence of HCV and co-infection examined were recorded. Duru et al. [39] reported that

out of 10 pregnant women that tested positive to HCV infection, the age group (30-34 years) had the highest prevalence 5 (50.0%), followed by the age group (25-29 years) with the prevalence of 4 (40.0%). The prevalence rate of HBsAg was highest among the age group (15-20 years), while that of Anti-HCV was seen in the age group (21-26 years) with prevalence rates of 20% and 20.0% and 9.1% respectively. Oluboye et al. [42] stated that the highest prevalence of HCV antibodies was found among pregnant women within the age group 15-20 years. The prevalence rates of HBV and HCV among pregnant women with respect to age is in line with similar studies in some other countries. Mortada et al. [62] from Egypt reported that HBV occurred higher among the women aged greater than 25 years than in those aged less than 25 years, though the difference was not significant. In another study carried out by Habiba & Memon [63] from Pakistan the majority the majority of the women tested positive to HBV were in the age range 25-35 years. Mwumvaneza et al. [64] from Rwanda reported that pregnant women aged between 25-49 years were more likely to be infected by HCV than younger women (15-24 years old). The age groups of pregnant women examined in the various studies in Nigeria were the majority that attended antenatal clinic of various hospitals [17,28].

Risk Factors and Prevalence of HBV and HCV among the Pregnant Women

The major causes of HBV and HCV infections are use of unscreened blood transfusions, and re-use of needles and syringes that have not been adequately sterilized, dental manipulations and tattooing Buseri et al. [5] reported that pregnancy is not a risk factor, and other risky behaviours may be responsible. According these authors there was no significant difference between the single and married pregnant women ($p>0.05$) In their study these authors stated that pregnant women with no formal education were found to possess the highest HBsAg seroprevalence rate (18.9%) compared to those with primary 5.8% secondary (3.7%) or tertiary (1.65%) level of education. The reason as they suggested, may be due to improved level of hygiene with high levels of education. Ezegebudo et al. [43] also reported that women with more education had less prevalence of HBV infection. However, Todd et al. [65] have earlier reported that women whose husbands have finished university education were more likely to have HBsAg, while women whose husbands had no formal education were less likely to have HBsAg. Their studies however, did not screen spouses of the seropositive; probably such an assessment may be necessary to authenticate their claim. Vertical transmission of HBV and HCV infection is thought to be a major mode of transmission in endemic areas like Nigeria [47]. Pregnant women are considered at a higher risk due to increase exposure to risk factors such as blood transfusion, intravenous drugs or surgical procedures [14]. In Nigeria setting, most women give birth to too many children (multigravidae). Azhar et al. [15] reported a high frequency of HBV infection among multigravidae. HBV and HCV infection might be at increased risk among multigravida because of their past pregnancies, hospital admission, blood transfusion and/or any surgical procedure in the past [66]. The rural dwellers could also be at risk factors for HBV and HCV infection. Socioeconomic

conditions among the poor and less education and crowded living condition especially in the rural areas, may contribute to HBV and HCV exposure as stated by Bwogi et al. and Gray et al. [67,68].

Pregnant women are considered a sentinel population because they are relatively unselected population, for who prevalence data may be extended to general sexually active heterosexual population [69]. Comparison of the reports found in Table 1 with other studies from other countries on pregnant women infected with HBV and HCV infections showed variable results. The differences in demographic characteristics of the could be due to socio-cultural environment, tribal practices, traditional operation, sexual practices (multiple sex parties and polygamous marriage), medical exposure and the differences in hepatitis epidemiology in these countries [17].

It has been noted that within the Nigeria setting the prevalence of HBV and HCV also varies from place to place. The difference may be attributed to the type of population studied, different geographical regions, genetic factors and socio-economic status, also level of education of the subjected tested, regional differences in risk factors and cultural practices may be responsible for these variations in prevalence rates.

Conclusion

Screening of pregnant women for viral hepatitis B and C is very paramount to prevent vertical transmission from mother to child as this will ensure better outcome in the infant public awareness, complete immunization against viral hepatitis, better sanitation facilities, safe drinking water, increase availability of antenatal care for early detection and well equipped hospitals for proper care will help in reducing viral hepatitis in pregnant women and their infants.

Recommendation

From this review it is obvious that only few works have been done with regards to the prevalence of viral hepatitis in Nigeria. Hence, more epidemiological studies should be carried out to ascertain the level of incidence and prevalence of these fatal diseases in the country.

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